

### ART. III.—SOME TROPHIC DISTURBANCES OF THE INSANE.

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(ILLUSTRATED.)

**T**ROPHIC disturbances are so frequently connected with neuroses, that it is not very surprising to find similar disturbances associated with insanity, also a disease of the central nervous system.

Any attempt to collate these and establish their relation to insanity must from the circumstances of the case be more or less imperfect. The subject has not specially attracted attention, notwithstanding the fact that it has important medico-legal relations, which latter circumstance may serve as an apology for the presentation of this paper. Resting chiefly on my own observations, as it does, it is necessarily imperfect.

The trophic disturbances found in the insane fall naturally into two classes, those essential to the disease and connected with its symptoms, and those modified by coexistent insanity, but found also in allied neurotic conditions. The trophic disturbances which are peculiar to insanity are hæmatoma auris, the hæmatoma of the lower intestines, the so-called electrical condition of the hair, and finally, peculiar changes in the hair and skin.

There are other peripheral abnormalities in strongly marked hereditary cases, but these are teratological in their nature, and are merely alluded to here to exclude them from consideration.

The insane ear is a marked phenomenon, and every writer on insanity has thought it necessary to make some allusion to this condition. The symptoms are so well known that it is scarcely necessary to describe them. What is chiefly note-

worthy about hæmatoma auris seem to me comprisable in the following four questions:

First, what is its frequency, and in what forms of insanity is it likely to occur? Secondly, is it peculiar to the insane? Thirdly, what are its pathology and relations to prognosis? Fourthly, what is its etiology?

In my observation, embracing twenty-two hundred and forty-three cases of insanity, it has occurred but forty-eight times, or in about two per cent. of the cases.

The following table gives an answer to the first question as far as my experience extends:

FORM OF INSANITY.	No. of Cases.	Cases of Othæmatoma.
Mania, Acute.....	260	4
*Mania, Chronic.....	467	6
Melancholia, Acute.....	301	1
Melancholia, Chronic.....	260	5
†Folie Circulaire.....	50	6
Hebephrenia.....	112	7
‡Dementia, Senile.....	82	1
Dementia, Terminal.....	334	5
Katatonie.....	46	1
Epileptic Insanity.....	101	5
§General Paresis.....	284	7
	2,297	48

\* Once bilaterally. † Four times. ‡ Before a maniacal attack. § Twice.

From this it would appear as if those forms of insanity most liable to vaso-motor changes were those in which the insane ear oftenest occurred. I may say in passing that I have observed it in idiots and imbeciles, and the best marked case of idiocy on Randall's Island has the remains of a true othæmatoma.

Roosa and Loring have observed three cases of othæmatoma in the sane. I am not acquainted with the histories of these cases, but one of a similar kind which came under my observation, though not insane, clearly belonged to that class of beings whom Maudsley has placed under the head of insane temperament.

From my own observation, I am inclined to accept Hun's opinion: "An individual who is thought to be sane, but who has an othæmatoma, must be the victim of a grave cerebral disease."

According to Virchow the essential morbid process is a softening induced by the general disturbance of nutrition, or possibly by local injuries of the cartilage. He says, "The older authors described the affection as erysipelas of the auricle occurring in the insane." It was supposed that in the hyperæmia and general change in the system there ensued a sub-perichondrial hemorrhage, but in true othæmatoma the hemorrhage is inter-cartilaginous. In my own observation, the latter has been the case only in the instance of the othæmatomata occurring in general paresis, and was, I think, a complicating trophic disturbance.

The prognosis, when hæmatoma anris occurs, is said to be grave; but it seems to me that the othæmatoma has no absolute bearing on prognosis, occurring, as it does, chiefly among the chronic cases.

Of Hun's twenty-four (24) cases, eight were cases of general paresis, six melancholia, four acute mania, four chronic mania, two dementia. Nine of these died in the asylum, nine were discharged unimproved, and the remaining six ended in dementia. The last number of the *West Riding Reports* gives an account of two cases of othæmatoma which ended in recovery, as did three cases that came under my observation, but such are, as might be expected, rather rare. My own three, and those mentioned in the *West Riding Reports*, are the only cases known to me amongst two hundred and twenty othæmatomata. In one of my cases which recovered, the othæmatoma responded readily to treatment by numerous slight punctures, which were attended with very little resultant deformity. This case was as follows:

G. C., single, German, æt. 26, boatman, intemperate, fair education, admitted July 8th. Excitable, violent and destructive, very incoherent. Has been in good physical health up to about two weeks ago, when he was thrown out of employment. He encountered much difficulty in searching for work, met with many slights, grew morose, went on a prolonged spree, after which became abstinent, and remained so two days before admission, when he suddenly became excited, pitched furniture out of the window and grew very violent. On admission, came in handcuffs, was incoherent and talkative, but answered some questions connectedly.

He had a bruise on the right side of his head. He continued incoherent, destructive and loquacious for about two weeks after admission, at which time there appeared an hæmatoma on the left ear. In a week he began to improve, and about the fourth of August, was considered recovered; the hæmatoma, which had been treated as before described, had disappeared, causing slight deformity, only noticeable on close inspection.

He was sent out on furlough, but not returning a month afterwards, and still continuing well, was discharged recovered.

In another case the appearance of othæmatoma preceded by two weeks the sudden and complete disappearance of delusions, and actions based on them.

A third passed into dementia, or rather melancholia, with stupor, the sudden disappearance of which was preceded by the occurrence of an othæmatoma on the left ear.

The etiology is a very much disputed question. Roosa holds the compromise view that there are two distinct forms, in one of which the swelling, etc., are produced by violence, the other by nervous causes arising from the condition of mental alienation. Virchow's views have already been given.

Gudden has shown that the auricles of ancient statues are frequently ornamented by tumors resembling the othæmatoma. The statues of Hercules, Pollux and the Trojan Hector, are said to have these tumors. These are claimed to be characteristic of the ancient boxers, yet, as Roosa remarks, the English authorities, living in the land of pugilists, scarcely mention them. The mental condition of the ancient boxers we do not know, and the fact that the English boxers seldom or never have had the tumors, fairly offsets any conclusion to be drawn from the statues of ancient boxers.

Gudden seems to believe othæmatoma is generally due to violence, and disputes the basis of explanation given by L. Meyer, that the reticular cartilage of the ear in all ages, always contains vessels. Hun claims that traumatic causes always produce a different form of othæmatoma from the hæmatoma of the insane, and that the causes of the latter are twofold, cerebral congestion and centripetal irritation of the system by the emotions.

I have seen the traumatic form, but this resembled most the

ordinary blood boil, not the true hæmatoma. There were in three cases on one ear true othæmatoma of undoubtedly idiopathic origin, while traumatic causes had produced on the other ear swelling and ecchymosis, which contrasted markedly with the hæmatoma. Brown-Sequard believes that othæmatoma is due to disease at the base of the brain, as is illustrated experimentally by the fact that section of the restiform body of the medulla oblongata in guinea pigs will cause hemorrhage, followed by gangrene, which latter condition would not occur, from the greater resisting power of the human ear.

Sankey gives the following explanation: "There are several veins which pass through the mastoid process of the temporal bone in an oblique direction, and so join the veins of the inner table, or empty their contents directly into the lateral sinus at the base of the skull."

It is also well known that the bony case of the skull in lunatics becomes more dense and compact, and thus arises a constriction or obliteration of the veins passing through the bone and œdema of the parts whence the veins come. When this swelling occurs, it therefore indicates densification (Sankey's term) of the skull bone has taken place. Hæmatoma of the lower intestines, as found in the chronic insane, occurs most frequently in chronic mania and general paresis. Its pathology is much the same as the hæmatoma of the ear, although no suspicion of traumatism can be here raised. Unless the patient be attacked by a slight diarrhea, the change in the intestine will not be suspected; but should this diarrhea occur three hours after, suddenly there will be noticed a bloody discharge which is very soon succeeded by peritonitis, and the physician at the autopsy will be astonished by the extent of the perforation which slight symptoms have given rise to.

The so-called electrical condition of the hair is apparently a very trifling circumstance, yet any one who has had much experience with the chronic insane will not hesitate to assign great prognostic importance to it. According to some, after the rough hair has occurred, a change to smooth is the evidence of a favorable mental alteration.

I cannot say aught as to truth of this, but of the opposite change I can speak most positively. Several times has an

apparent improvement in the patient's mental condition suggested the propriety of an early discharge, but the erect coarse hair, contrasting markedly with the smooth sleek condition in which it was when the patient entered the asylum, has caused a hesitation in discharging him which the subsequent history of the patient fully justified.

Three patients whose mental condition, as far as could be ascertained, justified their discharge, but in whom the erect hair had persisted, returned within one week after their discharge as recovered.

The changes in this condition are interestingly narrated by Charles Darwin, in his "Expression of the Emotions," pp. 295-297: "As I did not feel sure whether writers of fiction might not have applied to man what they had often observed in animals, I begged for information from Dr. Crichton Browne, with respect to the insane.

"Dr. Browne remarks that the bristling of the hair, which is so common in the insane, is not always associated with terror. It is perhaps most frequently seen in chronic maniacs who rave incoherently and have destructive impulses; but it is during their paroxysms of violence that the bristling is most observable.

"The fact of the hair becoming erect under the influence both of rage and fear, agrees perfectly with what we have seen in the lower animals.

"Dr. Browne adduces several cases in evidence. Thus, with a man now in the asylum, before the recurrence of each maniacal paroxysm the hair rises up from his forehead like the mane of a Shetland pony. He has sent me two photographs of two women taken in the interval between their paroxysms, and he adds, with respect to one of these women, 'that the state of her hair is a sure and convenient criterion of her mental condition.'

"Dr. Browne mentions an empirical confirmation of the relation which exists in the insane between the state of their hair and minds, that the wife of a medical man, who has charge of a lady suffering from acute melancholia, with a strong fear of death for herself, her husband and children, reported verbally to him, the day before receiving my letter, as follows: 'I

think Mrs. — will soon improve, for her hair is getting smooth, and I always notice that our patients get better whenever their hair ceases to be rough and unmanageable.' Dr. Browne attributes the persistently rough condition of the hair in many insane persons in part to their minds being always somewhat disturbed, and in part to the effects of habit; that is, to the hair being frequently and strongly erected during their many recurrent paroxysms.

"In patients in whom the bristling of the hair is extreme, the disease is generally permanent and mortal; but in others, in whom the bristling is moderate, as soon as they recover their health of mind the hair recovers its smoothness."

Temporary pigmentation of the skin occurs in other conditions than insanity, but permanent alterations are rare.

The disappearance of pigment in the negro race has been reported in but few cases, in most of which there was some change in the patient's mental condition, judging by the report.

Both these conditions have been observed in about thirty-five cases at the New York City asylum, the most interesting of which are the following:

CASE I.—G. H., æt. 18; single, abstinent, no nervous taint in family, admitted to N. Y. C. A., Dec. 1874, with the following history: He had always been healthy up to the age of 16, when he had much diarrhea and was much run down. About two weeks after recovery from this, a large carbuncle made its appearance over the third cervical vertebræ, on the left side of the neck, which did not heal up for over a year, but finally all disappeared, leaving a very deep scar, which is still visible. He was a masturbator, and three weeks after recovery from the carbuncle, while engaged in this practice one day, felt, as it were, something crack, and very soon after was attacked with chorea-like twitching of the left side, and after which his skin and hair changed in color on that side, sharply demarcated, irregular brown specks of from one-fourth to two inches in diameter appearing on the same side, the hair became gray in patches, in sharp contrast with the youthful brown. He had pathetic delusions of grandeur, and was very theatrical in his way of acting at this time. On admission the patient complained first, of a curious sensation coming from his neck,

then of a desire to laugh, then of sudden destructiveness. He is morbidly anxious about the changes in his hair, and skin, and had periods, about twice in twenty-four hours, when he would tear everything in his reach; if engaged in eating would stop, drop his knife and fork, and as suddenly seize them, making the most horrid grimaces. He broke the cups and saucers and threw them about wildly. He would at one time assume the most diverse, statuesque attitudes, and when he had done wrong, would pass into a cataleptoid state, always preceded by pain starting from cicatrix of carbuncle and running along left side of head. He still remains in this condition.

CASE II.—D. N., cook, æt. 56, negro, intemperate, single, was attacked about three years before, first with a sudden inability to see more than half an object at a time in the left eye. His memory became at the same time somewhat impaired. He could not recollect the tools of his trade, but if told them, could remember their names for some time after. His intelligence was somewhat impaired, though he continued to perform his business until two years before admission, when he was suddenly seized with a fit, his left side, at the time, appeared paralyzed, and he was unable to give even his own name, but was able to write it partially, the greater portion being composed of figures; this was about six months before admission. From the aphasia and hemiplegia he soon recovered, but gradually his skin became white in patches all over the left side, and his hair was grayish in spots on the same side. The change was very marked on the left side of the forehead. Unlike other cases of aphasia he was not much alarmed at his condition, but appeared very hilarious and jovial; soon after the disappearance of the aphasia, which occurred six months after admission, he was found to have very stupid ideas of grandeur, and the physical symptoms were those of general paresis. He was transferred about this time to another institution and lost sight of.

CASE III.—J. A., Scotch, type-setter, æt. 36. Three months before admission, early in 1876, had lead colic, succeeded by an attack of drop wrist, followed in turn by hemiplegia and amnesic aphasia; is said to have recovered from this under anti-saturnine treatment, but very slight spots began to appear on neck and



face with localized changes in hair and vertex. On admission, presented the usual symptoms, mental and physical, of progressive paresis. Four months after admission, he began to complain of a band-like sensation at first lumbar vertebræ, with electric pains, and his locomotion was markedly impaired. At this time he was found to have forgotten the tools used in his trade, and was at length confined to bed. His skin had become markedly clear and white on the face and neck, in marked contrast to the normal dark hue of the rest of the body.

A fourth case, a negro, was in the habit of being wet cupped over the fifth cervical vertebræ for several years. Three years before admission, Aug., 1876, he stopped the practice and had a severe attack of cerebral congestion, accompanied with enlargement of a gland in the neck and temporary aphasia. These symptoms passed off in about a year, but were succeeded by marked symptoms of progressive paresis, accompanied by alterations in the color of hair and skin, most marked in the side of the facial abnormality, and beginning at the centre of the forehead. The symptoms of paresis, to a great extent, passed off under the use of wet cups, but the patient is in a condition of dementia, and the changes in the skin and hair remain, but do not extend further. These changes in the hair and skin are peculiar to hebephrenia, chronic mania, and general paresis, and like the othæmatoma appear most frequently in forms where vaso-motor changes occur. Of the thirty-five, ten were paresis, ten hebephrenia, one folie circulaire, two chronic melancholia, six chronic mania and four epileptic insanity, and two terminal dementia. Even in chronic mania certain vaso-motor changes were evidently the basis of abnormal sensations, which preceded at the place of these sensations the trophic changes.

CASE V.—J. B. S., æt. 34. British North American, moderate drinker, single, sailor. Father moderate drinker, died of apoplexy. Family very intelligent, mother fifty-two years old when patient was born. The patient since birth has been eccentric, and for four years previous to admission, was subject to brief attacks of mental excitement, which amounted almost to insanity. About two years before admission, became

insane after exposure on Pacific Ocean; remained so for one year, and has never been the same since. Admitted to Asylum Sept. 11, 1877. On admission, answers questions reliably, but has the insane manner. Probably has delusions; no emotional disturbance. He lately arrived in New York, spent his money, and was summarily arrested for lying on a sofa in a dry goods store. He is slightly incoherent in general conversation, and has a singular way of answering which is not natural to him; is reticent in regard to the immediate effect of his past life; has no hallucinations of hearing or vision and is in good physical health. He became excitable, and continued so with intervals of relative calmness for about thirteen months. This excitement appeared to affect his general health, and he was thought to be sick, but this was found to be subjective, and owing to abnormal sensations of electricity. Five days he refused to eat his food from a tin dish, but declined to give his reasons therefor. The active maniacal symptoms ceased about this time, and the abnormal sensations were soon followed by local changes in pigmentation at the points of sensation. In the course of the following month he complained of severe pains in the head, followed by localized changes in the hair at the spots where the pain was felt. The patient continues in this condition.

One condition peculiar to insanity is the deficient capillary circulation of the extremities, found in the stupor following atonic melancholia and epilepsy; this results in about five per cent. of the cases in gangrene. The trophic changes modified by, but not peculiar to insanity are mostly confined to general paresis, epileptic insanity, though some have appeared in hebephrenia and katatonia.

(The enlargement of the thyroid gland which occurred during the initial symptoms of the latter disease in one case mentioned in my paper on katatonia, I refer without hesitation to this origin, as may also be said of a synostosis of the joints of the great toe, which occurred during the progress of a period of excitement in a case of hebephrenia.)

These changes are peculiar skin affections, necrosis of the bones, of idiopathic origin, fragility of the ribs and other bones, necrosis of the lungs, peculiar gangrene differing in

course from the ordinary kind, peculiar arthropathies and a tendency of injuries to heal with suppuration and almost by first intention.

There are other conditions which certainly appear to have some relation to the trophic disturbances, the asymmetrical temperature in paresis and presence of scorbutus without apparent cause.

General paresis is likely to come under the observation of the physician in two forms: in one there is a peculiar clearness of skin and tendency to emaciation with a likelihood of slight injuries taking on gangrenous action; the other is the ordinary form.

It is in the former that the trophic disturbances take place with greatest rapidity, that "bullæ" form with greatest quickness and proceed to gangrene.

Prominent amongst the disturbances is fragility of the ribs. This occurs in about 25 per cent. of the paretics, but frequently passes unnoticed even at the post-mortem.

It may sometimes lead to serious consequences. A patient enters the asylum, is placed in a room with other patients, or even in a single padded room, tumbles about and is found in the morning with several fractured ribs. A very striking instance of this lately happened at the asylum with which I am connected. A paretic, about 40 years of age, an ex-politician of the lower grade, was admitted, passed one night relatively quiet, being under restraint; but the night following the restraint was removed, he attempted to choke a fellow patient. An attendant was hurriedly summoned, drew him off, and a struggle ensued. The result was that the paretic received fractures of eleven ribs, more or less comminuted; a condition of things which the exterior of the body would scarcely lead us to expect. A sufficient explanation of which is the fact that there was found at the post-mortem to be as much ossification of the costal cartilages as if the man was eighty.

This condition, I may add in passing, has been the subject of medico-legal investigation in England. In the patient whose spinal cord has first been shown, an attempt to open the thoracic cavity with a cartilage knife resulted—although no great violence was used—in fracture of six of the ribs on one

side and three on the other; the ribs, being very fragile and spongy. His history is as follows:

CASE VI.—H. C., American nativity, of intemperate habits, ordinary education, was admitted August, 1876,—antecedent history not obtainable—is somewhat excitable but rather inclined to be jovial, is in fair physical condition, but the skin has the peculiar clearness of the asthenic type of general paresis. The patient refused food, and had a voracious appetite alternately. He was very destructive and had rather exalted ideas at times. Bullæ began to appear on the joints of the toes, and fingers of the right side, and proceeded rapidly to gangrene as the patient continued to walk about. He complained, at times, of shifting pains. His co-ordinating power towards the last was very much impaired, and he became markedly ataxic. There was no history, and evidence of the existence of syphilis was wanting. The right tibia became painlessly and gradually enlarged. His tendency to get out of bed rendered night watching necessary, and he was transferred to the hospital ward. Soon after his transfer there he became very fat, in marked contrast with his previous condition. The enlargement was not marked in the arms, although the thighs and hips appeared much increased. This condition continued for about a month, when he began to grow thinner, more and more bullæ appeared on the extremities on unexposed surfaces, especially on the right side, and these soon spread into gangrene. The patient died December, 1876, six months after admission, and the following appearances were noted at the autopsy:

Thoracic cavity: condition of ribs already described; lungs and heart normal; abdominal cavity: kidneys normal; spleen and liver normal; intestines as usual; head: cranium thin and brittle; dura mater was thickened and presented other evidences of pachymeningitis, more marked on the hemispherical convexity than was the dura of spinal cord. The leptomeninges were thickened and infiltrated, more on the posterior than on the anterior aspect of the cord. On the fresh specimen a reddish-gray discoloration of the region bordering the collateral sulcus was observed in every part of the cord examined; to this was added in the upper cervical cord a patch of the same

color on the lateral columns, more marked on the left side near the reticular processes.

A similar condition was observed in the centre of each pyramid of the medulla oblongata extending through the vertical fibre of the pons to the pes pedunculi cerebri. All these patches were diffuse, did not sink below the level of the surrounding substance when cut, and appeared to be firm.

Examination of the fresh tissue showed nothing which was not found in the prepared section from the hardened specimen. To the naked eye the gray matter appeared perfectly healthy. In addition to the lesion already described in the medulla oblongata, there was a bloody suffusion of an area corresponding to a diagonal parallelogram drawn from the left pyramid upward and outward towards the restiform column; this was lost in the hardening process by reason of a retraction in the solution of bichromate of potash in which it was preserved.

On microscopical examination, a slight degeneration similar to that found in the posterior columns was found in both lateral columns, even in the upper dorsal portion of the cord, where to the naked eye these funiculi appeared healthy. The areas principally diseased occupied the centre of the column of Goll and the regions bordering the collateral sulcus. They exhibited an exquisite example of the vesicular degeneration of Leyden, regarding which Dr. Spitzka (under whose direction the investigation was made) entertains the opinion (believed to be supported by longitudinal section) that the spaces characteristic of this lesion are tubular, and consist of fluidified coagulable contents, occupying the place of degenerated nerve fibres.

This view is borne out by the numerous transitions which existed between nerve fibres with a hypertrophied myelin and these cavities, many of which latter proved their derivation from the former by containing one or two apparently normal axis cylinders.

That the cavities contained fluid, or at least semi-fluid contents, was proven by their having granule cells in their centre and showing a concentric lamination under good illumination. These cells are presumably white corpuscles which have taken up some of the products of myelin disintegration, and there is

a strict line of division to be drawn between them and many of the swelled granule cells, and granular bodies of various authors, which can be conclusively proven to be fragments of disintegrated nerve tubules, whose granular appearance is due to necrobiotic and retrograde change, whose apparent nucleus is a fragment of the axis cylinder. There was an immense

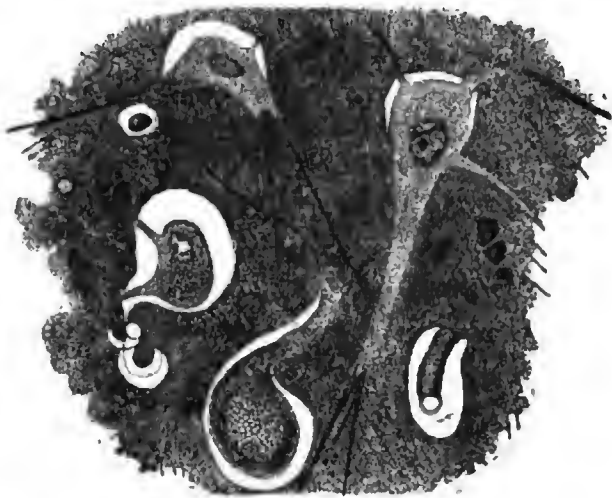


FIGURE 1.

increase in the morbid areas of Frommann's cells, and these were hypertrophied, the connective tissue septa were thickened and the vascular walls sclerotic. The posterior median fissure of the cord presented some dilatations which may be regarded as the result partly of inflammatory adhesions of the opposite walls of this fissure, and partly of an obstructed lymph out-flow. The most suggestive changes were connected with the nerve cells of the anterior cornua; they were preternaturally brittle, and contained immense accumulations of a yellow granular material, the precise nature of which it would be rash

Figure 1 represents the changes in the large nerve cells of the anterior cornua; in the upper part is a healthy cell; a second shows the nucleus still existing side by side with the granular deposit, and in the lower part is one whose nucleus seems to have disappeared entirely; the other exhibits two such granular bodies in one cell,

The pericellular spaces are seen to be enlarged (their contour is incorrectly rendered too sharp).

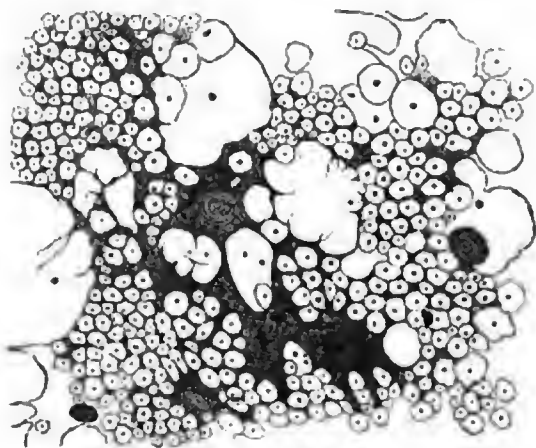


FIGURE 2.

to surmise; in some cases no nucleus could be found, and on the whole the bodies were diminished in number as well as size.

One case where necrosis of the lungs, and some arthropathies shortly to be alluded to, existed, was the following:

CASE VII.—W. T., black, U. S., æt. 49, admitted July, 1875. Has been intemperate. Social relations not good. Two years before admission had a fit, after which he was quarrelsome and obstinate, but not violent. Three weeks before admission, had an attack of apoplexy, followed by slight hemiplegia, but without marked impairment of intellect. A month after this he was incoherent, had loss of memory, and showed inability to fix his attention. On admission, his intelligence was considerably impaired, he being incapable of answering simple questions. He had quiet and limited incoherence. His pupils were unequal, his locomotion impaired, and his speech hesitating.

He improved during the first two months after admission, and had a voracious appetite. One morning, at the beginning

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Figure 2 shows the changes of the white substance in the centre of the deeper part of the funiculus gracilis. The sclerotic vessels whose lumen, in some instances, almost obliterated, are clearly recognizable. The fine neurilemma is hypertrophied (rendered too granular in the cut), and large nuclei are found scattered here and there in the newly-formed formless connective tissue.

of the third month, it was noticed that he had some difficulty in speech; at about half past nine, the same morning, commenced crying, as he was totally unable to speak, and had lost entirely power over right side; at the same time there were noticed simultaneous momentary muscular contractions on that side. He used the left arm as if he had not lost his intelligence, and had his usual power over left side.

The following day the aphasia continued and he suffered much distress from this; pulse bounding, full and rapid. He was ordered five minims tr. aconite every hour; at about 3 A. M., on the following morning, he commenced yelling out loudly; the movements, although continuing, were not simultaneous, and the pulse was approaching its normal frequency.

Three months following, the aphasia had disappeared, and the patient complained of grating sensation in the knee joint of the right side; this was followed by a uniform painless enlargement of the head of tibia. Similar enlargements were noticeable on the phalango-metatarsal and metacarpal articulation of that side. The patient was relatively coherent, had apparently slight loss of memory and some emotional disturbance. He had another apoplectic attack, followed by very extravagant delusions of wealth and importance.

He was destructive and violent, but soon quieted down. In about six months he had another apoplectic attack, followed by aphasia and left hemiplegia, with the usual foetid expectoration of necrosis of the lungs. From this attack the patient died. His lungs were found, as had been anticipated, necrotic.

The brain showed far advanced periencephalitic change. The cortex was adherent to the pia. The nerve cells atrophic and diminished in number. There was loss of the fusiform cells at base of sulci, and a dirty yellowish discoloration of the white substance was found in the fresh specimen.

The peduncular tracts were not examined. Spinal cord, dura mater thickened, irregularly, and fused with the dense lamina of the arachnoid. Over the exit of the fourth dorsal nerve was a transparent atrophic oval spot in this membrane about three millimetres broad. The whole area of the transverse section of the white columns was of a dirty yellowish tint, and the cut surface was irregular. At various regions, prin-



cipally in the dorsal portion of the cord periphery, wedge-shaped sclerotic patches of slight extent, and not very sharp demarcation, could be found; from the altitude of the origin of first to the eighth dorsal nerves, there was a softening in the centre of the left lateral column extending longitudinally, and of only one and a half millimetres in diameter. This softening could not be preserved in the subsequently prepared microscopic specimen, and it is impossible to state what the lesion really was; suffice it to say, that the posterior columns presented a lesser degree of the same change as found in the former case of C, but the same change found in the posterior columns was found also in the lateral and even the anterior, so that the changes were here more diffuse.

The anterior nerve roots few in number. The ganglion cells of the anterior cornua were diminished, and they manifested a peculiar sclerotic condition; in one case took hardly any carmine staining in the centre, which was filled with a yellowish mass, no nucleus visible.

Some abnormal appearances were noticeable in neighboring cells, and those of Clarke's columns, all changes being most marked in lower dorsal portion of cord. The degenerated condition of the cells differed somewhat in appearance from that found in C. In the latter big, lumpy granular masses were found, here they rather resembled the so-called amyloid substance. In this case the interspinal ganglia examined in the fresh state showed pigmentary and granular nerve cells.

Double nuclei were very frequent. Pigmentation in the form of a clump near the nucleus, was also common. The cell-capsules appeared thickened, their nuclei increased. The number of free granules between the nerve bodies were decidedly increased. Anatomico-pathological diagnosis—chronic periencephalo-myelo-meningitis, softening of a part of the left lateral column, atrophy of the nerve cells in the anterior cornua, pigmentary changes of cells in Clarke's column, chronic degenerative change in the interspinal ganglia.

This would contrast somewhat with the diagnosis in the case of C, where it is evident there were not only the same chronic periencephalo-myelo-meningitis, granular and pigmentary degeneration of nerve cells in anterior columns, but

also sclerosis with vesicular degeneration of the columns of Goll, and the centre of the funiculi-cuneati, together with undetermined unilateral changes in the reticular field of the medulla oblongata.

Arthropathies of the nature of those already referred to as observed by Charcot, Ball, and J. K. Mitchell, in locomotor ataxia, have been found in about fifteen cases of general paresis, nine of which were more properly locomotor ataxia and paresis.

One, a woman, had epilepsy preceding menstruation, which ceased at the climacteric, and was followed by paresis.

The remaining five were ordinary cases of paresis.

The acne which occurs in many cases of hebephrenia is one form of skin disease, evidently of this nature, and I may here state, that although I watched carefully, I have never seen acne follow the use of the bromide either in the parietic or the epileptic insane.

One case of herpes zoster appeared on the thigh, following the course of the middle cutaneous nerve, in an epileptic; this regularly disappeared in the period immediately antecedent to an attack, but returned subsequently; it however totally vanished under the use of bromide of potassium, and the fluid extract of conium. One case, a parietic, had preceding a maniacal attack a similar form of herpes following the course of the musculo-spiral nerve. With the reduction of frequency of the maniacal attacks the eruption grew less frequent, and when the patient had sunk into a condition of dementia it disappeared altogether.

A skin eruption which appeared in one case resembled markedly at first, the roseola of scarlet fever; each bright red spot was soon studded with slight vesicles, exuding a colorless fluid, which gradually dried up, and formed a whitish rash in the centre. It appeared under the following circumstances: A patient, 46 years old, had been struck on the head by a policeman, in the year 1846. This had rendered him temporarily unconscious. He recovered, but became more irritable than he had been previous to the injury. In the year 1867, he became markedly depressed, and asylum treatment becoming necessary, was admitted to the City Lunatic Asylum; was discharged, improved, during the same year, but readmitted in

1868; was again discharged, improved, and remained in fair mental health until the year 1874, when he became suddenly violent; tried to cook ice, and his daughter interfering, he attempted to cut her throat.

He was transferred in consequence to the City Asylum for Insane, August, 1874. On admission, was in a condition of typical melancholia with frenzy.

He gradually became less depressed and emotional, was more cheerful, and about two years after physical and mental symptoms of paresis appeared, the former most marked on the left side.

The eruption preceded these by two months. It lasted for eighteen months and then disappeared, as did all the symptoms of paresis in the following two months. The patient improved very much, and appeared almost recovered, when he was transferred to another institution.

And now I am approaching the most difficult part of my subject.

The relation of trophic symptoms and the lesions on which they may be supposed to depend. Difficult as is the referring of motor and sensory disturbances to pathological changes, it is still more difficult to detect those which constitute the basis of trophic anomalies. Not only is the whole subject of trophic and vaso-motor conditions one of the most obscure in physiology, as well as pathology, but we here have another difficulty to deal with; these forms of insanity most frequently marked by intense peripheral nutritive anomalies, present so many other symptoms related to central lesions, that we have to proceed with the greatest care in selecting any one or several lesions as the basis of the trophic disturbance.

Fortunately the experience of those who have made pathological examinations in cases of nervous affections not connected with insanity, here comes to our aid. And as regards the conclusions I have been able to draw from my post-mortem examinations of general paresis, I have been able to select as probably trophic those changes which are analogous to those discovered, in not a few instances, of progressive locomotor ataxia.

That this similarity in the dependence of analogous symptoms on similar lesions, is in perfect accordance with the

general similarity between these two diseases regarding many other points, is obvious.

Our general conclusion is, that the chronic and slowly progressing affections, such as progressive muscular atrophy, muscular lipomatosis, the marbling of the extremities, phlegmonous intractable ulcers, atonic decubitus, and the various changes of the bones and joints, whether in the direction of osteomalacia, premature and excessive ossification, hydrops articuli or thickening of the articular extremities of the long bones, are all referable to pathological conditions of the gray nerve cells and neuroglia of the anterior cornua of the cord.

We are far from being able to distinguish between the presumably different pathological conditions which determine the different character of peripheral anomalies. We can only make this general statement. With regard to the sudden visceral complications occurring without certain local cause, and frequently without local predisposition, such as pulmonary gangrene, pleural ecchymosis, necrotic changes in the kidney, hæmatoma of the lower intestines, I would in accordance with the suggestion of a writer in this journal\* attribute them to sudden and rapidly occurring conditions.

The often immense hemorrhages, inflammatory softenings, the intense and extreme periencephalitis, the arachnoid hemorrhages, and inflammation of the dura, occurring in progressive paresis, present us with all these conditions, which in the light of recent researches of Brown-Sequard, and others, stand in relation to distant visceral complications. And the occurrence of arachnoid blood cysts in a certain category of imbecile, epileptic and terminal dementia cases probably exercise a similar influence.

These trophic disturbances form links in the chain connecting insanity with the other branches of neurology, of which insanity is but one of the higher branches.

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\* Psychological Pathology of Progressive Paresis, JOURNAL OF NERVOUS AND MENTAL DISEASE, January, 1877.